

July 15, 2009

Mr. James D. Marshall  
California Regional Water Quality Control Board  
Central Valley Region  
11020 Sun Center Drive Suite 200  
Rancho Cordova, CA 95670

**RE: Comments and Recommendations Regarding Tentative Amendments to Order No. R5-2007-0031, City of Angels**

At the City of Angels' request and with the review and concurrence of the City, this document has been prepared for direct submittal to the Regional Water Board.

The following are the City of Angels (City) comments and recommendations regarding the 15 June 2009 Tentative Order amending the City's current permit, Order No. R5-2007-0031. We request that the following matters be considered by Regional Water Board management prior to the Tentative Order being submitted to the Regional Water Board for approval.

Page	Section	Comment
<b>Order R5-2009-XXXX:</b>		
2	Finding 6	Finding 6 does not need to include dichlorobromomethane since there is no reasonable potential once disinfection is changed from chlorine to UV, as is required prior to discharge to Angels Creek.
2	Finding 6	The term "chronic whole effluent toxicity" should be changed here and globally throughout the amended Order to read "chronic effluent toxicity." This is because the required chronic effluent toxicity testing does not use "whole" effluent per Appendix E, V.B.7.
3	Closing Paragraph	The date above the EO's signature needs to change to the August adoption date.
<b>Order R5-2007-0031-01:</b>		
1	II.A	The "X June" adoption date needs to be changed to "X August".
6	II.O	Some supplemental language to the original 2007 anti-backsliding finding may be appropriate to cover the amendment. This would also apply to Fact Sheet III.C.3.
8	Table 6. Effluent Limitations	Based on Provision VI.C.4.b.iii, there is no reasonable potential for the effluent discharge to cause dichlorobromomethane excursions; therefore, the dichlorobromomethane effluent limitation and discussion of dichlorobromomethane should be eliminated from the Order, including the Fact Sheet. The facility description should describe UV as the effluent disinfection method.
8	Table 6. Effluent Limitations	All mass limits should be rounded to 2-place accuracy so as to not overstate the technical accuracy of the input data (i.e., most analytical results have no more than 2-place accuracy). This issue of 2-place accuracy effluent limitations is discussed in the CTR.
8	Table 6. Effluent Limitations	With effluent filters being in place and continuous effluent turbidity monitoring, there is no need for settleable solids effluent limitations or monitoring.

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17	VI.C.1.b	This section should be deleted because the switch to UV will eliminate production of disinfection byproducts such as chloroform.
17	VI.C.2.a	"Chronic whole effluent toxicity" should be revised to "chronic effluent toxicity" per Appendix E, V.B.7. Use of the term "WET" should also be replaced globally with "ET" to avoid confusion.
E-2	Appendix E, IV.A.1	For clarity "When discharging to Angels Creek," should be added to the beginning of the first sentence of this section. This is the same language used by the Regional Water Board in Appendix E, V. regarding toxicity testing.
E-3	Table E-3. Effluent Monitoring	Footnote 2 should be deleted because this outfall is short. Any difference in effluent temperature in winter/spring between EFF-001 and the discharge end of the outfall should be insignificant.
E-3	Table E-3. Effluent Monitoring	With the required change in effluent disinfectant from chlorine to UV, there is no reason to monitor chronic exposure disinfection byproducts such as dichlorobromomethane and chloroform.
E-3	Table E-3. Effluent Monitoring	With tertiary filters and continuous effluent turbidity monitoring, there is no need to monitor settleable solids.
E-3	Table E-3. Effluent Monitoring	Daily testing of BOD and TSS seems excessive for a minor discharge of tertiary effluent with continuous monitoring and electronic notification for indicators of process upset (e.g., turbidity and pH), especially considering this tertiary effluent discharge must also be diluted 20:1. Two samples per week should be adequate in this situation.
E-3, and E-7	Table E-3. Effluent Monitoring; and Table E-5. Receiving Water Monitoring Requirements	The TDS test should be replaced with the TDFS test if the objective is to measure salinity, and to begin to quantify inadequacy of EC as an indicator of effluent salinity.
E-4	Appendix E, V	The word "Whole" should be removed from the title because whole effluent chronic toxicity testing is not required. Use of the terms "whole" and "WET" should be revised throughout this section.
E-7	Table E-5. Receiving Water Monitoring Requirements.	Footnote 1 should exclude priority pollutants monitoring as done for effluent monitoring per Table E-3.
E-7	Table E-5. Receiving water Monitoring Requirements	Chloroform monitoring should be eliminated based on conversion to UV.
F-13	Fact Sheet IV.C.2.a	The section needs to be revised to reflect that dilution credits are being granted.
F-13, and 8	Table F-2. Summary of Technology-based Effluent Limitations; and Table 6. Effluent Limitations	One or both of these tables should be revised so that they agree with each other.
F-15	Table F-3. Copper Hardness Evaluation	This table does not appear to be correct. The cTR copper criterion is listed as 2.8 µg/L, when this appears to be the acute criterion. The dilution credit of 9 applies to the acute criterion, not the chronic. Footnote 3 makes reference to the chronic criterion.
F-16	Fact Sheet IV.C.2.c	The sixth paragraph (bottom of page F-18 as printed 15 June 2009) is of concern for several reasons. The single point discharge that resulted in 92.4% mixing 36 feet downstream was located where the bulk of the creek flow was forced between two boulders. This was the original design. Since that did not result in

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		<p>95% mixing (our understanding of the desires of the Regional Water Board at that time for granting dilution credits and mixing zones), we tested the cross-stream diffuser. The current diffuser design involves a concrete weir to accurately measure creek flow, and to distribute that creek flow uniformly across the width of the weir. The diffuser is on the downstream edge of the weir to distribute the effluent uniformly into the entire creek flow. The diffuser openings are on one-foot centers to allow multiple zones of passage for aquatic life in the immediate vicinity of the diffuser. To accommodate the proposed Order language that “the outfall diffuser must be limited to no more than one-half of the stream width”, the diffuser has been redesigned to double the density of diffuser openings so that half of the openings can be plugged without compromising diffuser hydraulics under the full range of design flows.</p> <p>The potential problem as we see it is that mixing all of the effluent into only half of the creek flow at the weir has not been modeled. We do not know if this approach will result in better or poorer mixing than the single point discharge located between the two boulders referred to in the Order. In other words, we do not know if there will be a plume of blended effluent/creek water containing more than 10% effluent, 18 feet downstream from the diffuser discharging 100% of the effluent into only 50% of the creek flow. Results from field testing the actual diffuser and weir may require that the Order be reopened to revise the mixing zones, particularly the acute mixing zone which appears to be the critical issue from a hydraulics perspective as well as from a water quality perspective (i.e., the acute LTA governs for ammonia [Table F-7], copper [Table F-8], and zinc [Table F-10].</p> <p>We know from acute bioassay results for this and similar tertiary WWTPs that acute toxicity is not an actual problem because the Order requires a median 90% survival of fish after 4 days of continuous exposure to 100% effluent. Therefore, the issue is how to develop this acute mixing zone from a regulatory perspective:</p> <ul style="list-style-type: none"> <li>▪ Where to monitor for compliance with CTR acute criteria.</li> <li>▪ How to monitor for compliance with CTR acute criteria at the selected location.</li> </ul> <p>The tentative Order proposes an acute monitoring location 18 feet downstream of the diffuser. This is a very turbulent reach of Angels Creek. We have no evidence that diffusing all of the effluent into half the creek will result in no more than 10% effluent in every parcel of water passing this location. However, creek hydraulics in this reach are sufficiently dynamic that a one-hour composite sample should be representative of the one hour, acute exposure (rather than instantaneous exposure) of aquatic life at the edge of the acute mixing zone. Based on these concerns and reasoning, we suggest that the Order reflect:</p> <ol style="list-style-type: none"> <li>1. The acute mixing zone is limited to 18 feet downstream of the diffuser.</li> <li>2. The Order may be reopened to amend this acute mixing zone length or the diffuser width based on field trials with the actual diffuser, its operation providing a very large zone of passage.</li> <li>3. Compliance with the CTR acute aquatic life objectives is to be determined by 24-hour composite samples collected 18 feet downstream from the diffuser, at a stream location centered on the diffuser, and at mid-depth.</li> </ol> <p>Based on these same concerns for the chronic mixing zone, we suggest that the Order reflect:</p> <ol style="list-style-type: none"> <li>1. The chronic mixing zone is limited to 36 feet downstream of the diffuser.</li> </ol>

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		2. The Order may be reopened to amend this chronic mixing zone length or the diffuser width based on field trials with the actual diffuser. 3. Compliance with the CTR chronic aquatic life criteria is to be determined by 24-hour composite samples collected 36 feet downstream of the diffuser at mid-stream, and at mid-depth.
F-21	Fact Sheet IV.C.3.b	Reference to dichlorobromomethane should be deleted because of the required disinfection process change to UV.
F-23	Fact Sheet IV.C.3.h	With conversion to UV disinfection, there is no reasonable potential for significant, long-term concentrations of the carcinogen chloroform (a disinfection byproduct) in this effluent. Accordingly, this section and other sections discussing chloroform (e.g., VI.C.1.b.) should be deleted.
F-25	Fact Sheet IV.C.3.j	Based on the conversion to UV disinfection, this section should be deleted.
F-32	Fact Sheet IV.C.3.q	Based on tertiary filters and continuous monitoring of effluent turbidity, there is no reasonable potential for settleable solids problems. Accordingly, this section and the associated effluent limitations (Tables 6 and F-14) should be deleted.
F-32	Fact Sheet IV.C.3.s	The chronic zinc translator listed here (0.986) is different from the chronic zinc translator used in Table F-10 (0.978). These should be made consistent with each other.
F-34	Fact Sheet IV.C.4.b	The ECA discussion for aquatic life criteria, now, must be expanded to show how dilution credits can be applied.
F-36	Table F-9. WQBEL Calculations for Lead	Showing translators greater than 1.0 suggests that there can be more dissolved lead in a sample than there is total recoverable lead in that same sample. Is this correct, or is the lead translator different from a conventional translator: $[\text{Total Recoverable Metal}] \times \text{Conventional Translator} = [\text{Theoretical Dissolved Metal}]$
F-37	Table F-11. WQBEL Calculations for Dichlorobromomethane	The dilution credit needs to be changed from 19 to 18, if Table F-11 is not deleted altogether as being unnecessary with UV disinfection.
F-37 and F-42	Table F-13. Summary of Water Quality-Based Effluent Limitations; and Table F-14. Summary of Final Effluent Limitations	The copper AMEL on these tables is 9.8 µg/L, not 9.2 µg/L as shown on Table F-8 and Table 6. These should be consistent.
F-38	Fact Sheet IV.C.5	As with Appendix E, V., this section should be revised to reflect that whole effluent chronic bioassays are not required by this Order.
F-39	Fact Sheet IV.D.2 and 3	Reference to dichlorobromomethane is not needed with the conversion to UV.
F-48	Fact Sheet VI.C.	This should be revised to reflect that whole effluent chronic toxicity testing is not required by this Order, as is appropriate when the Order requires a minimum level of effluent dilution. "Whole" should be deleted from the title of VI.C.2.
F-49	Fact Sheet VII.B.1.b	This discussion of the disinfection byproduct chloroform should be deleted based on the required conversion of the effluent disinfection system to UV.
F-50	Fact Sheet VII.B.2.a	This section needs to be revised to reflect the TUC trigger in the Order, and that whole effluent chronic toxicity monitoring is not required for regular or accelerated

Page	Section	Comment
		chronic toxicity testing (see Appendix E V.B.7).
F-56	Fact Sheet VIII.C	Should this section be augmented with the August 2009 public hearing date for the amendments?

Sincerely,  
ECO:LOGIC Engineering



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cc: Gary Ghio, City of Angels  
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